

Notice of Allowability

Application No.

09/896,276

Examiner

Hussein A. El-chanti

Applicant(s)

DIBIASIO ET AL.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 12/5/2006.
2. ☒ The allowed claim(s) is/are 1-4,8-18,20,22,23,32-34,38-41 and 45-47.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

ARIO ETIENNE

SUPERVISORY PATENT EXAMINER

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. James Blanchette on Dec. 26, 2006.

2. The application has been amended as follows:

1. **(CURRENTLY AMENDED)** An intermediate network device for use in a computer network having a plurality of entities configured to issue requests to reserve network resources for use by traffic flows, the reservation requests specifying one or more flow parameters, the intermediate network device comprising:

a traffic scheduler having one or more network resources for use in forwarding network traffic received at the device at different rates;

a classification engine configured to identify network messages belonging to respective traffic flows based upon predefined criteria;

a resource reservation engine in communicating relationship with the traffic scheduler and the classification engine, the resource reservation engine including a flow analyzer that is configured to apply one or more sets of predefined heuristics that are accessible by the flow analyzer to the one or more flow parameters specified in the reservation requests to determine a type of traffic of the given traffic flow, the flow parameters including a token bucket rate, a token bucket size, and a peak data rate, the one or more sets of heuristics including heuristics configured to compare the token bucket rate, token bucket size, and a ratio of the peak data rate to the token bucket rate each with a different programmed constant descriptive of a particular type of traffic, to determine the type of traffic independent of any marking values in packets of the given traffic flow that identify traffic type, and the flow analyzer further configured to select

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a queue and/or a queue servicing algorithm for assignment to the traffic flow corresponding to the reservation request.

5-7. (CANCELLED)

8. (CURRENTLY AMENDED) The intermediate network device of claim 7 1 wherein a first set of predefined heuristics is given by the following equation:

$$(r \leq r') \text{ AND } (b \leq b') \text{ AND } \frac{p}{r} \leq p_to_r'$$

where,

r is the token bucket rate, b is the token bucket size, p is the peak data rate, r' is a programmable token bucket rate constant, b' is a programmable token bucket size constant, and p_to_r' is a ratio of peak data rate to token bucket rate constant.

13. (CURRENTLY AMENDED) In a computer network having a plurality of entities interconnected by a plurality of intermediate network devices having one or more resources for use in forwarding network traffic flows, a method for assigning queues and/or queue servicing algorithms to the traffic flows, the method comprising the steps of:

receiving, at the intermediate network device, a reservation request message specifying one or more flow parameters for a given traffic flow, the one or more flow parameters including a token bucket rate, a token bucket size, and a peak data rate;

applying, at the intermediate network device, one or more sets of heuristics to the flow parameters of the received reservation request message to determine a type of traffic of the given traffic flow, the one or more sets of heuristics including heuristics configured to compare the token bucket rate, token bucket size, and a ratio of the peak data rate to the token bucket rate each with a different programmed constant descriptive of a particular type of traffic, to determine the type of traffic independent of any marking values in packets of the given traffic flow that identify traffic type; and

selecting a queue and/or a queue servicing algorithm at the intermediate device for use with the given traffic flow, based on the application of the one or more sets of heuristics.

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19. (CANCELLED)

21. (CANCELLED)

22. (CURRENTLY AMENDED) An intermediate network device for use in a computer network having a plurality of entities configured to issue requests to reserve network resources for use by traffic flows, the reservation requests specifying one or more flow parameters, the intermediate network device comprising:

means for receiving a reservation request message specifying one or more flow parameters for a given traffic flow, the one or more flow parameters including a token bucket rate, a token bucket size, and a peak data rate;

means for applying one or more sets of heuristics to the flow parameters of the received reservation request message to determine a type of traffic of the given traffic flow, the one or more sets of heuristics including heuristics configured to compare the token bucket rate, token bucket size, and a ratio of the peak data rate to the token bucket rate each with a different programmed constant descriptive of a particular type of traffic, to determine the type of traffic independent of any marking values in packets of the given traffic flow that identify traffic type; and

means for selecting a queue and/or a queue servicing algorithm for use with the given traffic flow based on the application of the one or more sets of heuristics.

33. (CURRENTLY AMENDED) A method for assigning appropriate queues in an intermediate network device to traffic flows that pass through the intermediate network device, the method comprising the steps of:

receiving, at the intermediate network device, a reservation request message specifying one or more flow parameters that describe a given traffic flow, the one or more flow parameters including a token bucket rate, a token bucket size, and a peak data rate;

comparing, at the intermediate network device, the token bucket rate with a programmed token bucket rate constant descriptive of a particular type of traffic, and

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comparing, at the intermediate network device, the token bucket size with a programmed token bucket size constant descriptive of the particular type of traffic;

comparing, at the intermediate network device, the ratio of the peak data rate to the token bucket rate with a programmed peak data rate to token bucket rate constant descriptive of the particular type of traffic;

~~comparing the one or more flow parameters to one or more constants stored in a memory of the intermediate network device; and~~

in response to the steps of comparing, determining, at the intermediate network device, a type of traffic for the given traffic flow independent of any marking values in packets of the given traffic flow that identify traffic type;

based on the determined type of traffic, directing the given traffic flow to a queue of the intermediate network device adapted for the determined type of traffic.

35-37. (CANCELLED)

40. (CURRENTLY AMENDED) An intermediate network device configured to assign appropriate queues to traffic flows that pass through the intermediate network device, the intermediate network device comprising:

a communication facility configured to receive a reservation request message specifying one or more flow parameters that describe a given traffic flow, the one or more flow parameters including a token bucket rate, a token bucket size, and a peak data rate;

a flow analyzer configured to compare the token bucket rate with a programmed token bucket rate constant descriptive of a particular type of traffic, to compare the token bucket size with a programmed token bucket size constant descriptive of the particular type of traffic, and to compare the ratio of the peak data rate to the token bucket rate with a programmed peak data rate to token bucket rate constant descriptive of the particular type of traffic~~compare the one or more flow parameters to one or more constants stored in a memory of the intermediate network device~~ and to determine a type of traffic for the given traffic flow independent of any marking values in packets of the given traffic flow that identify traffic type; and

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a traffic scheduler configured to direct the given traffic flow to a queue adapted for the determined type of traffic.

42-44. (CANCELLED)

47. (CURRENTLY AMENDED) A computer-readable storage media containing storing executable program instructions for assigning appropriate queues in an intermediate network device to traffic flows that pass through the intermediate network device, the executable program instructions ~~comprising program instructions configured when executed~~ [[to]]:

receive a reservation request message at the intermediate network device specifying one or more flow parameters that describe a given traffic flow, the one or more flow parameters including a token bucket rate, a token bucket size, and a peak data rate;

compare the token bucket rate with a programmed token bucket rate constant descriptive of a particular type of traffic;

compare the token bucket size with a programmed token bucket size constant descriptive of the particular type of traffic;

compare the ratio of the peak data rate to the token bucket rate with a programmed peak data rate to token bucket rate constant descriptive of the particular type of traffic;

~~compare the one or more flow parameters to one or more constants stored in a memory of the intermediate network device; and~~

determine, in response to the comparison, a type of traffic for the given traffic flow independent of any marking values in packets of the given traffic flow that identify traffic type; and

based on the determined type of traffic, direct the given traffic flow to a queue adapted for the determined type of traffic.

48-49. (CANCELLED)

3. Claims 1-4, 8-18, 20, 22-23, 32-34, 38-41 and 45-47 are allowed:

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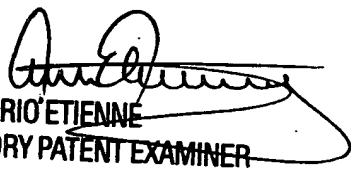
4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hussein A. El-chanti whose telephone number is (571)272-3999. The examiner can normally be reached on Mon-Fri 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ario Etienne can be reached on (571)272-4001. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Hussein El-chanti

Jan. 3, 2006


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